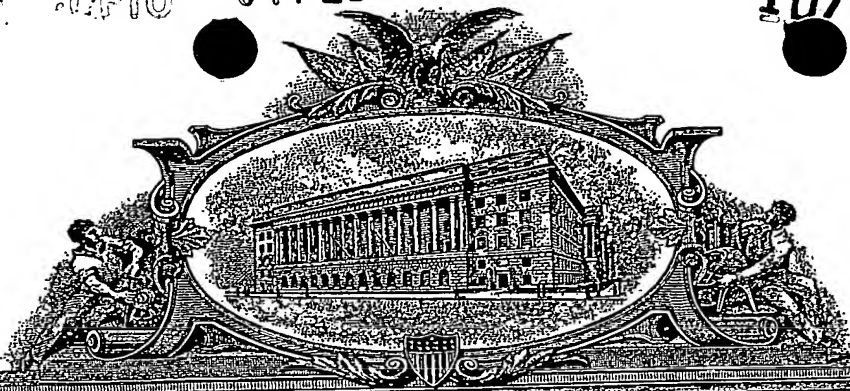


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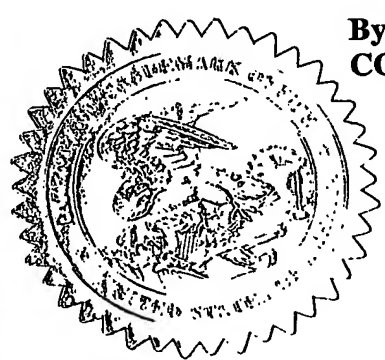
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APPLICATION NUMBER: 60/401,606  
FILING DATE: August 07, 2002  
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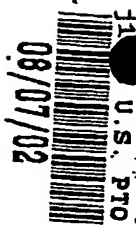
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Sir:

Transmitted herewith for filing is the Provisional Patent Application (35 U.S.C. §111) of inventor John Harrison, having a residence and address of 23 Joseph Court, San Rafael, CA 94903, for an AUDIO SPEAKER CONE APPARATUS AND METHOD OF MANUFACTURE.

Enclosed are the following:

Specification (3 pages);

Credit Card Payment Form for the filing fee of \$80.00 (Applicant is entitled to Small Entity Status).

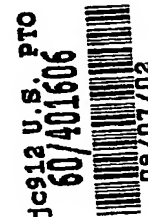
Please direct all correspondence to the undersigned.

Very truly yours,

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LDJ:bms

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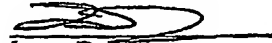


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U.S. PROVISIONAL PATENT APPLICATION

OF

JOHN HARRISON

FOR

AUDIO SPEAKER CONE APPARATUS AND METHOD OF MANUFACTURE

Best Available Copy

## AUDIO SPEAKER CONE APPARATUS AND METHOD OF MANUFACTURE

## BACKGROUND OF THE INVENTION

Field of the Invention

5 This invention relates generally to audio speakers, and more specifically to an improved speaker cone apparatus and method for its construction.

Description of the Prior Art

10 Audio speaker cones (also sometimes referred to as speaker diaphragms or acoustic diaphragms) are traditionally manufactured from common paper fiber which has been molded, pressed, and placed into a frame. However, known speaker cones often have undesirable tone characteristics and/or sonic properties (such as distortion or ghost notes), and are prone to deterioration and failure.

SUMMARY OF THE INVENTION

15 The inventive method and apparatus provides for construction of audio speaker cones from at least some quantity of hemp fiber, alone or with other materials and/or binding chemicals. The hemp composition may range from approximately 2% to approximately 100% hemp fiber. In the preferred embodiment, the composition includes approximately 80% hemp  
20 pulp, and 20% other material such as non-hemp paper pulp (such as Eucalyptus pulp) and binding chemicals (such as latex).

The inventive composition may be mixed, molded, pressed, and placed into a frame in the traditional manner of speaker cone construction, all as is well known in the industry. The material may be used for new or reconed guitar speakers, dust caps (e.g., one inch to seven inches  
25 in diameter), voice coils, home stereos, musical instrument speakers, or any other audio speakers or loudspeakers. The resultant speaker cones have been found to have superior tone and sonic

properties (e.g., no distortion or ghost notes) and increased durability when compared to other known speaker cone constructions.

The preferred composition may consist of:

- 5                   1. 80% Manila hemp
2. 20% eucalyptus pulp
3. 5% blue-black dye and yellow dye (for cone color)
4. 7% table salt (acts as dye wick)
5. 1-3% SB latex: glyoxal styrene butadiene (binder)
- 10               6. 0.5% AKD: alkyl ketene dimer base stearic acid (organic) (water proofer)
7. 0.1% cationic polyamine (retention and sticks to fiber, good for drainage)
8. 0.1% anionic polyacrylamide (same)
9. (Trace) enzyme, fungicide for white rot fungus

(Note: these proportions are approximate.)

15

A twelve-inch full-range speaker designed for musical instrument use and incorporating the inventive speaker cone composition may consist of the following:

Frame: stamped rolled-steel frame with six spokes and holes for various mounting applications, outside dimension 12.1875 inches, height 3.625 inches.

20               Magnet: 2.25 lb. cylindrical torus permanent magnet, made of Nickel-Cobalt-Alloy (AlNiCo), outside dimension 4.0 inches, height 1.5 inches.

T-yoke: low-carbon steel one-piece assembly, with a threaded hole for a screw to hold the magnet cover, outside dimension 4.300 inches, height 0.312 inches, center pole dimension 1.734 inches, height 1.878 inches.

25               Top plate: low-carbon rolled steel, with holes threaded to receive screws for mounting the frame to motor assembly, outside dimension 4.300 inch, height 0.312 inch..

Magnet cover: non-ferrous (e.g., aluminum) cup held on to motor assembly with non-ferrous brass hardware and adhesive, diameter 4 7/8 inch, height 2 3/4 inch.

Motor: assembly of T-yoke, magnet and top plate. Mounted to frame by three motor screws.

5 Spider: phenolic treated cotton fabric, outside dimension 4.5 inches, internal dimension 1.75 inches, height 0.25 inches.

Pad ring sectors: four paper chip-board, height 0.25 inches.

Voice coil: two-layer copper wire wound on a Nomex support bobbin at 8 or 16 ohms, diameter 1.75 inches, height 1 inch, windings height 2.666 inches.

10 Cone: self-molded, seamless hemp fiber composite, outside dimension 11.625 inches, apex (opening) 1.75 inches, height 3.125 inches..

Wires: silver flexible tinsel lead wire.

Dome: phenolic treated cotton fabric, diameter 3.5 inches, height 0.5 inches.

Adhesives: rubber gasket adhesive, cyano-acrylate, PVA suspended in water.

15 The inventive cone composition can be utilized in any number of speaker cone sizes, including but not limited to 4 inch, 6 inch, 8 inch, 10 inch, 12 inch, 15 inch, and 18 inch.